DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Claim Objections

2. Claim1 is objected to because of the following informalities: On line 8, the word "ot" should be changed to "to". Appropriate correction is required.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-7, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamiya (USP 5313555).

Regarding claim 1 Kamiya teaches an audio signal processing apparatus comprising an audio input for obtaining an entered audio signal, an audio output for outputting an outgoing audio signal, and a processor (CPU, col. 6 line 18) for performing a transformation to improve the intelligibility of speech present in the entered audio signal, characterized in that the processor is arranged to obtain a noise level value indicating the extent of noise influencing the intelligibility of a reproduction of the outgoing audio signal (noise detector, col. 6 lines 4-10), and has the ability to transform the entered audio signal into the outgoing signal (recognized result, fig. 1) by the transformation modeling at least one aspect of the Lombard effect, not being audio signal volume control, based upon the noise level value (col. 3-4, lines 60-24).

Regarding claim 2, Kamiya teaches an audio signal processing apparatus, characterized in that a microphone (col. 5, line 48) and a noise value extractor (noise detector, col. 6, lines 4-10) are present for providing the noise level value from environmental noise to the processor (CPU, col. 6, line 18).

Regarding claim 3, Kamiya teaches an audio signal processing apparatus, characterized in that a noise value characterizer is present for retrieving the noise level value from the entered audio signal (noise detector, col. 6 lines 4-10).

Regarding claim 5, Kamiya teaches an audio signal processing apparatus, characterized in that a signal type characterizing means (similarity calculating unit, col. 4, line 55) is present for supplying a signal type characterization value to the processor, for enabling the processor to perform the transformation of the entered audio signal depending on the signal type characterization value (similarity calculating unit, col.4 lines 55-63).

Regarding claim 6, Kamiya teaches an audio signal processing apparatus, characterized in that the transformation changes a spectral contour of the entered audio signal, based upon the noise level value (warping unit, col. 4-5 lines 67-9).

Regarding claim 7, Kamiya teaches an audio signal processing apparatus, characterized in that the transformation changes a word length (matching window, col. 6, line 28)of the entered audio signal, based upon the noise level value (see the CPU description with dynamic programming, col. 6 lines 18-29).

Regarding claim 10, Kamiya teaches a method of increasing the intelligibility of speech in an audio signal, the method comprising: a first step of obtaining an entered audio signal (receives a voice waveform, col. 5 lines 46-47); a second step of transforming the entered audio signal into an outgoing audio signal (fig.1); and a third step of outputting the outgoing audio signal (fig. 1), characterized in that the method obtains a noise level value (fig. 1), indicating the extent of noise influencing the intelligibility of a reproduction of the outgoing audio signal (detecting a noise level of the input voice, col. 6, lines 4-5), and transforms the entered audio signal into the outgoing audio signal by a transformation modeling at least one aspect of the Lombard effect, not

being audio signal volume control, based upon the noise level value (col. 3-4, lines 60-24).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya as applied to claim 1 above, further in view of Engebretson et al. (USP 5,412,735)

Regarding claim 4, Kamiya does not teach an apparatus for audio signal processing, characterized in that a selection input is present for setting the noise level value to a chosen value. Engebretson an apparatus for audio signal processing, characterized in that a selection input is present for setting the noise level value to a chosen value (signal level adjuster, col. 4-5 lines 64-16) for the benefit of manually adjusting a noise threshold level. It would have been obvious to one skilled in the art at the time of the invention to combine Kamiya audio signal processing apparatus with

Engebretson's signal level adjuster for the benefit of manually adjusting a noise threshold levels when automatic leveling or normalization is not desired.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya in view of Stahl (USPGPub 2003/0138118).

In regard to claim 8, Kamiya teaches an audio signal processing apparatus comprising an audio input for obtaining an entered audio signal, an audio output for outputting an outgoing audio signal, and a processor (CPU, col. 6 line 18) for performing a transformation to improve the intelligibility of speech present in the entered audio signal, characterized in that the processor is arranged to obtain a noise level value indicating the extent of noise influencing the intelligibility of a reproduction of the outgoing audio signal (noise detector, col. 6 lines 4-10), and has the ability to transform the entered audio signal into the outgoing signal (recognized result, fig. 1) by the transformation modeling at least one aspect of the Lombard effect, not being audio signal volume control, based upon the noise level value (col. 3-4, lines 60-24).

Kamiya does not teach a television receiver.

Stahl teaches a method for control of a television receiver [0002] which is able to improve the intelligibility of speech present in an entered audio signal, characterized in that an audio signal processing apparatus is present, comprising an audio input for obtaining an entered audio signal, an audio output for outputting an outgoing audio signal, and a processor for transforming the entered audio signal into the outgoing audio signal by a transformation modeling at least one change to an audio signal selected from aspects of the Lombard effect [0002, 0004, and 0006] for the benefit of controlling

the volume of the television receiver using the Lombard effect. It would have been obvious to one skilled in the art at the time of the invention to combine Kamiya audio signal processing apparatus with Stahl's method for control of a unit comprising a television receiver for the benefit of controlling the volume of a television based on the Lombard effect.

In regard to claim 9, Kamiya teaches an audio signal processing apparatus comprising an audio input for obtaining an entered audio signal, an audio output for outputting an outgoing audio signal, and a processor (CPU, col. 6 line 18) for performing a transformation to improve the intelligibility of speech present in the entered audio signal, characterized in that the processor is arranged to obtain a noise level value indicating the extent of noise influencing the intelligibility of a reproduction of the outgoing audio signal (noise detector, col. 6 lines 4-10), and has the ability to transform the entered audio signal into the outgoing signal (recognized result, fig. 1) by the transformation modeling at least one aspect of the Lombard effect, not being audio signal volume control, based upon the noise level value (col. 3-4, lines 60-24).

Kamiya does not teach a radio receiver. Stahl teaches a method for control of a radio program receiver [0002] which is able to improve the intelligibility of speech present in an entered audio signal, characterized in that an audio signal processing apparatus is present, comprising an audio input for obtaining an entered audio signal, an audio output for outputting an outgoing audio signal, and a processor for transforming the entered audio signal into the outgoing audio signal by a transformation modeling at least one change to an audio signal selected from aspects of the Lombard

effect [0002, 0004, and 0006] for the benefit of controlling the volume of the radio using the Lombard effect. It would have been obvious to one skilled in the art at the time of the invention to combine Kamiya audio signal processing apparatus with Stahl's method for control of a unit comprising a radio receiver for the benefit of controlling the volume of a radio based on the Lombard effect.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chi, Sang-Mun and Oh, Yung-Hwan "Lombard Effect Compensation and Noise Suppression for Noisy Lombard Speech Recognition" Spoken Language, 1996. ICSLP 96. Proceedings., Fourth International Conference on, Vol. 4, 3-6 Oct. 1996.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW BAKER whose telephone number is (571)270-1856. The examiner can normally be reached on 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571) 272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MHB

/Angela Ortiz/

Supervisory Patent Examiner, Art Unit 4154